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Payette Lake
Valley County, Idaho

National Eutrophication Survey, Las Vegas, Nev

Prepared for

Environmental Monitoring and Support Lab, Las Vegas, Nev

Jul 77

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NATIONAL EUTROPHICATION SURVEY

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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REPORT
ON
PAYETTE LAKE
VALLEY COUNTY
IDAHO
EPA REGION X
WORKING PAPER No. 784

WITH THE COOPERATION OF THE
IDAHO DEPARTMENT OF HEALTH AND WELFARE
AND THE
IDAHO NATIONAL GUARD

JULY, 1977

REPORT ON PAYETTE LAKE

VALLEY COUNTY, IDAHO

EPA REGION X

by

National Eutrophication Survey

Water and Land Quality Branch
Monitoring Operations Division
Environmental Monitoring & Support Laboratory
Las Vegas, Nevada

and

Special Studies Branch
Corvallis Environmental Research Laboratory
Corvallis, Oregon

Working Paper No. 784

OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY

July 1977

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point source discharge reduction and nonpoint source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by the U.S. Environmental Protection Agency and to augment plans implementation by the states.

ACKNOWLEDGMENTS

The staff of the National Eutrophication Survey (Office of Research and Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the Idaho Department of Health and Welfare for professional involvement, to the Idaho National Guard for conducting the tributary sampling phase of the Survey, and to those Idaho wastewater treatment plant operators who provided effluent samples and flow data.

The staff of the State of Idaho Department of Health and Welfare, Division of Environment, provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports and provided critiques most useful in the preparation of this Working Paper Series.

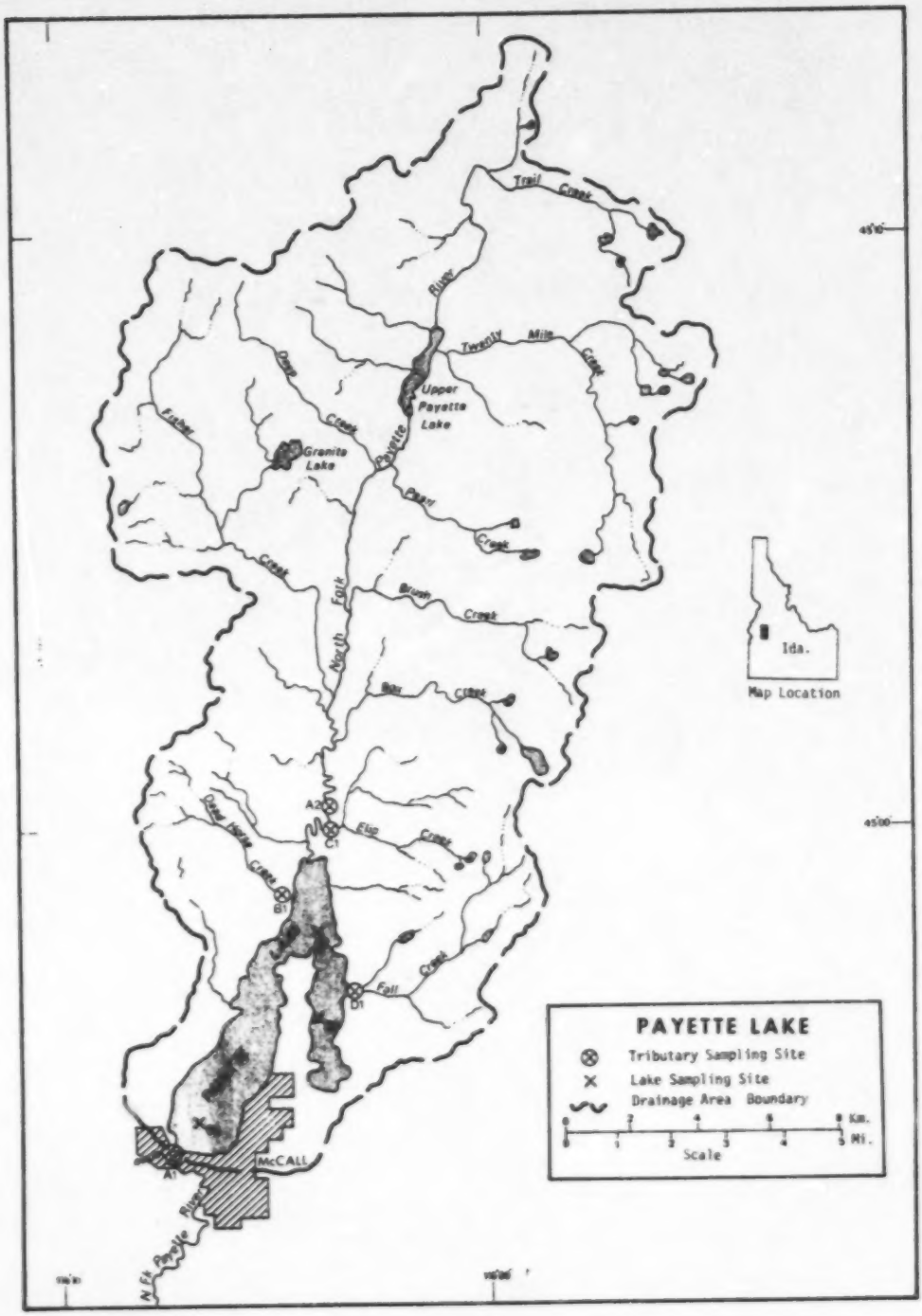
Major General James S. Brooks, Adjutant General of Idaho, and Project Officer Major Vestal L. Baker, who directed the volunteer efforts of the Idaho National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF IDAHO

LAKE NAME	COUNTY
American Falls Reservoir	Bannock, Bingham, Power
Cascade Reservoir	Valley
Coeur d'Alene Lake	Benewah, Kootenai
Dworshak Reservoir	Clearwater
Hauser Lake	Kootenai
Hayden Lake	Kootenai
Island Park Reservoir	Fremont
Lake Lowell (Deer Flat Reservoir)	Canyon
Magic Reservoir	Blaine, Camas
Palisades Reservoir	Bonneville (Lincoln in WY)
Payette Lake	Valley
Lower Twin Lake	Kootenai
Upper Twin Lake	Kootenai


Trail Creek
Twenty Mile Creek
Upper Payette Lake
Granite Lake
Payette River
North Fork
Deep Creek
Brush Creek
Bear Creek
Elsie Creek
Fall Creek
Gold Fisher Creek
McCALL
N.Fk. Payette River
A1
A2
B1
C1
D1
Ida.
Map Location
PAYETTE LAKE
Tributary Sampling Site
Lake Sampling Site
Drainage Area Boundary
Km.
Mi.
Scale
45°10'
45°00'

REPORT ON PAYETTE LAKE, IDAHO

STORET NO. 1611

I. CONCLUSIONS

A. Trophic Condition:*

Based on field observations and Survey data, Payette Lake is considered early mesotrophic. Chlorophyll a values ranged from 1.4 µg/l to 13.8 µg/l with a mean of 4.6 µg/l. Potential for primary productivity as measured by algal assay control yield was low. Of the 13 Idaho lakes sampled in 1975, 10 had greater median total phosphorus, 6 had greater median inorganic nitrogen, and 8 had greater median orthophosphorus levels than Payette Lake.

Survey limnologists did not note any problem conditions during their visits to the lake. However, the Idaho Environmental Overview (Idaho Department of Water Resources, et al. 1975) reports pollutants in the reservoir attributable to discharge from septic tanks and a lumber mill located near the lake.

*See Appendix E.

B. Rate-Limiting Nutrient:

Algal assay results indicate that Payette Lake was limited by available phosphorus levels. Spikes with phosphorus, or nitrogen and phosphorus simultaneously resulted in increased assay yields. Addition of nitrogen alone did not stimulate a growth response. Lake data indicate phosphorus to be limiting primary production on one of the sampling dates (09/16/75) whereas nitrogen appears to be limiting on the other two sampling occasions.

C. Nutrient Controllability:

1. Point sources -

There were no known point sources impacting Payette Lake during the sampling year. Septic tanks were estimated to account for 0.4% of the phosphorus input. However, the Idaho Department of Highways map used for the septic tank determination did not show individual residences, and Survey limnologists reported more homes surrounding the lake than were estimated using this map. These uncounted additional residences could substantially increase the calculated phosphorus loading to Payette Lake.

The present estimated loading of 0.19 g $P/m^2/yr$ is less than that proposed by Vollenweider (1975) as an "oligotrophic" loading (See Section IV-F). Although the actual phosphorus loading to the lake is probably greater than estimated, the

fact remains that water quality in Payette Lake is high, and any potential sources of pollution should be evaluated carefully in order to maintain the excellent condition of the lake.

2. Nonpoint sources -

Gaged tributaries accounted for 70.3% of the total phosphorus load reaching Payette Lake during the sampling year. The estimated phosphorus load from ungaged drainage areas was 20.3% of the total load.

The phosphorus export rates of the two gaged tributaries impacting Payette Lake (Section IV-D) are substantially lower than those found in tributaries draining into downstream Cascade Reservoir (range of 20-31 kg $P/km^2/yr$, mean of 25 kg $P/km^2/yr$).*

*See "Report on Cascade Reservoir", Working Paper No. 777.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

Lake and drainage basin characteristics are itemized below. Lake surface area, mean depth and volume were provided by Herman Ray (personal communication). Tributary flow data were provided by the Idaho District Office of the U.S. Geological Survey (USGS). Outlet drainage area includes the lake surface area. Mean hydraulic retention time was obtained by dividing the lake volume by mean flow of the outlet. Precipitation values are estimated by methods as outlined in National Eutrophication Survey (NES) Working Paper No. 175. A table of metric/English conversions is included as Appendix A.

A. Lake Morphometry:

1. Surface area: 21.60 km^2.
2. Mean depth: 5.7 meters.
3. Maximum depth: ?
4. Volume: 123.349 x 10^6 m^3.
5. Mean hydraulic retention time: 140 days.

B. Tributary and Outlet:
(See Appendix B for flow data)

1. Tributaries -

Name	Drainage area (km^2)	Mean flow (m^3/sec)
A-2 North Fork Payette River	255.9	7.58
B-1 Horse Creek	12.8	0.29
Minor tributaries and immediate drainage -	82.5	2.71
Totals	351.2	10.58
2. Outlet - A-1 North Fork Payette River	373.0	10.19

C. Precipitation:

1. Year of sampling: 77.7 cm.
2. Mean annual: 71.6 cm.

III. LAKE WATER QUALITY SUMMARY

Payette Lake was sampled three times during the open-water season of 1975 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from three stations on the lake and from a number of depths at each station (see map, page v). During each visit, depth-integrated samples were collected from each station for chlorophyll a analysis and phytoplankton identification and enumeration. During the first and last visits, 18.9-liter depth-integrated samples were composited for algal assays. Maximum depths sampled were 53.3 meters at Station 01, 53.3 meters at Station 02, and 33.5 meters at Station 03. For a more detailed explanation of NES methods, see NES Working Paper No. 175.

The results obtained are presented in full in Appendix C and are summarized in III-A for waters at the surface and at the maximum depth for each site. Results of the phytoplankton counts and chlorophyll a determinations are included in III-B. Results of the limiting nutrient study are presented in III-C.

LOWER PALETTE

STORET CODE 1611

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER		N*	(6/ 4/75) S*** = 3 RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	N*	(8/ 1/75) S*** = 3 RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	N*	(9/16/75) S*** = 3 RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)	0.-1.5 M DEPTH	6	3.8- 9.5	7.4	0.0- 1.5	6	13.9- 15.3	14.3	0.0- 1.5	6	16.4- 17.9	17.6	0.0- 1.5
	MAX DEPTH**	3	3.1- 3.4	3.2	33.5- 50.3	3	0.6- 1.5	1.0	32.3- 53.3	3	4.7- 6.0	5.2	29.9- 53.3
DISSOLVED OXYGEN (MG/L)	0.-1.5 M DEPTH	6	9.4- 11.0	9.6	0.0- 1.5	6	5.4- 9.8	7.6	0.0- 1.5	6	7.9- 8.6	8.1	0.0- 1.5
	MAX DEPTH**	3	8.4- 10.0	8.8	33.5- 50.3	3	7.6- 8.2	8.0	32.3- 53.3	3	7.8- 9.1	8.1	29.9- 53.3
CONDUCTIVITY (UMHOS)	0.-1.5 M DEPTH	0	*****-*****	*****	****-*****	6	14.- 481.	17.	0.0- 1.5	6	16.- 21.	18.	0.0- 1.5
	MAX DEPTH**	0	*****-*****	*****	****-*****	3	18.- 18.	18.	32.3- 53.3	3	14.- 23.	16.	29.9- 53.3
PH (STANDARD UNITS)	0.-1.5 M DEPTH	6	7.0- 7.6	7.4	0.0- 1.5	6	7.2- 8.4	7.3	0.0- 1.5	6	7.1- 8.1	7.7	0.0- 1.5
	MAX DEPTH**	3	6.8- 7.0	7.0	33.5- 50.3	3	6.7- 7.1	7.1	32.3- 53.3	3	6.5- 7.1	6.8	29.9- 53.3
TOTAL ALKALINITY (MG/L)	0.-1.5 M DEPTH	6	11.- 17.	15.	0.0- 1.5	6	10.- 149.	15.	0.0- 1.5	6	10.- 13.	10.	0.0- 1.5
	MAX DEPTH**	3	10.- 13.	12.	33.5- 50.3	3	10.- 18.	12.	32.3- 53.3	3	10.- 12.	10.	29.9- 53.3
TOTAL P (MG/L)	0.-1.5 M DEPTH	6	0.008-0.014	0.010	0.0- 1.5	6	0.005-0.116	0.011	0.0- 1.5	6	0.017-0.031	0.024	0.0- 1.5
	MAX DEPTH**	3	0.010-0.039	0.012	33.5- 50.3	3	0.007-0.070	0.010	32.3- 53.3	3	0.022-0.301	0.022	29.9- 53.3
DISSOLVED ORTHO P (MG/L)	0.-1.5 M DEPTH	6	0.011-0.016	0.013	0.0- 1.5	6	0.007-0.033	0.008	0.0- 1.5	6	0.002-0.004	0.002	0.0- 1.5
	MAX DEPTH**	3	0.009-0.013	0.012	33.5- 50.3	3	0.007-0.009	0.009	32.3- 53.3	3	0.002-0.002	0.002	29.9- 53.3
NO2+NO3 (MG/L)	0.-1.5 M DEPTH	6	0.020-0.060	0.045	0.0- 1.5	6	0.020-0.080	0.020	0.0- 1.5	6	0.020-0.020	0.020	0.0- 1.5
	MAX DEPTH**	3	0.030-0.060	0.050	33.5- 50.3	3	0.040-0.060	0.050	32.3- 53.3	3	0.040-0.060	0.050	29.9- 53.3
AMMONIA (MG/L)	0.-1.5 M DEPTH	6	0.030-0.040	0.040	0.0- 1.5	6	0.020-0.060	0.020	0.0- 1.5	6	0.020-0.020	0.020	0.0- 1.5
	MAX DEPTH**	3	0.020-0.040	0.030	33.5- 50.3	3	0.020-0.030	0.020	32.3- 53.3	3	0.020-0.020	0.020	29.9- 53.3
KJELDAHL N (MG/L)	0.-1.5 M DEPTH	6	0.200-0.300	0.200	0.0- 1.5	6	0.200-0.500	0.200	0.0- 1.5	6	0.200-0.200	0.200	0.0- 1.5
	MAX DEPTH**	3	0.200-0.200	0.200	33.5- 50.3	3	0.200-0.400	0.200	32.3- 53.3	3	0.200-0.400	0.200	29.9- 53.3
SECCHI DISC (METERS)		3	3.5- 12.5	7.2		1	4.0- 4.0	4.0		3	6.7- 6.7	6.7	

* N = NO. OF SAMPLES
** MAXIMUM DEPTH SAMPLED AT EACH SITE
*** S = NO. OF SITES SAMPLED ON THIS DATE

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
06/04/75	1. Asterionella	1,170
	2. Melosira	1,080
	3. Synedra	225
	4. Chroomonas	90
	5. Cryptomonas	45
	Other genera	---
	Total	2,610
08/01/75	1. Asterionella	1,505
	2. Melosira	1,254
	3. Tabellaria	502
	4. Chroomonas	351
	5. Synedra	151
	Other genera	150
	Total	3,913
09/16/75	1. Tabellaria	629
	2. Melosira	449
	3. Asterionella	180
	4. Crucigenia	45
	Other genera	---
	Total	1,303

2. Chlorophyll *a* -

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
06/04/75	01	3.0
	02	3.3
	03	1.4
08/01/75	01	6.2
	02	2.6
	03	13.8
09/16/75	01	4.6
	02	3.7
	03	2.8

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

a. 06/04/75

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum Yield (mg/l-dry wt.)
Control	0.005	0.035	0.2
0.05 P	0.055	0.035	1.1
0.05 P + 1.0 N	0.055	1.035	18.0
1.00 N	0.005	1.035	0.2

b. 09/16/75

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum Yield (mg/l-dry wt.)
Control	0.005	0.045	0.2
0.05 P	0.055	0.045	1.4
0.05 P + 1.0 N	0.055	1.045	14.1
1.00 N	0.005	1.045	0.2

2. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that potential for primary production in Payette Lake was low at both sample collection times (06/04/75, 09/16/75). The addition of phosphate produced an increase in yield over that of the control, indicating phosphorus limitation. Spikes with nitrogen and phosphorus simultaneously resulted in maximum yield while the addition of nitrogen alone did not stimulate growth beyond the control yield.

Lake data show mean N/P ratios of approximately 6/1 and 7/1 on the first and second sampling dates, respectively, indicating nitrogen limitation. On the third sampling date, the N/P ratio was 18/1 indicating phosphorus limitation (an N/P ratios of 14/1 or greater is generally considered indicative of phosphorus limitation).

IV. NUTRIENT LOADINGS
(See Appendix D for data)

For the determination of nutrient loadings, the Idaho National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of June and July when two samples were collected. Sampling was begun in October 1974, and was completed in September 1975.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Idaho District Office of the USGS for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a USGS computer program for calculating stream loadings. Nutrient loads indicated for tributaries are those measured minus known point source loads, if any.

Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of USGS) were estimated by using the mean annual nutrient loads, in $kg/km^2/yr$, in North Fork Payette River and Horse Creek at Stations A-2 and B-1 and multiplying the means by the ZZ area in km^2.

A. Waste Sources:

1. Known municipal - None

2. Known industrial - None

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/yr	% of total
a. Tributaries (nonpoint load) -		
A-2 North Fork Payette River	2,770	67.7
B-1 Horse Creek	105	2.6
b. Minor tributaries and immediate drainage (nonpoint load) -	825	20.3
c. Known municipal STP's - None		
d. Septic tanks* -	15	0.4
e. Known industrial - None		
f. Direct precipitation** -	380	9.0
Totals	4,095	100.0

2. Output - A-1 North Fork Payette River 4,030

3. Net annual P accumulation - 65

*Estimate based on 27 lakeshore residences, 3 camps and 1 park.
**Estimated (See NES Working Paper No. 175).

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (nonpoint load) -		
A-2 North Fork Payette River	129,995	65.6
B-1 Horse Creek	5,505	2.8
b. Minor tributaries and immediate drainage (nonpoint load) -	38,690	19.5
c. Known municipal STP's - None		
d. Septic tanks* -	535	0.3
e. Known industrial - None		
f. Direct precipitation** -	23,320	11.8
Totals	198,045	100.0

2. Outputs - A-1 North Fork Payette River 118,875

3. Net annual N accumulation - 79,170

*Estimate based on 27 lakeshore residences, 3 camps and 1 park.
**Estimated (See NES Working Paper No. 175).

D. Mean Annual Nonpoint Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
North Fork Payette River	11	508
Horse Creek	8	430

E. Mean Nutrient Concentrations in Ungaged Streams:

Tributary	Mean Total P (mg/l)	Mean Total N (mg/l)
C-1 Elip Creek	<0.012	0.282
D-1 Fall Creek	<0.015	0.504

F. Yearly Loadings:

In the following table, the existing phosphorus loading is compared to the relationship proposed by Vollenweider (1975). Essentially, his "eutrophic" loading is that at which the receiving waters would become eutrophic or remain eutrophic; his "oligotrophic" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A "mesotrophic" loading would be considered one between "eutrophic" and "oligotrophic."

Note that Vollenweider's model may not be applicable to water bodies with very short retention times or in which light penetration is severely restricted from high concentrations of suspended solids in the surface waters.

	Total Yearly Phosphorus Loading ($g/m^2/yr$)
Estimated loading for Payette Lake	0.19
Vollenweider's "eutrophic" loading	0.74
Vollenweider's "oligotrophic" loading	0.37

V. LITERATURE REVIEWED

Idaho Department of Water Resources, Department of Health and Welfare, Department of Fish and Game, and Department of Budget, Policy Planning and Coordination. 1975. Idaho Environmental Review. Boise, Idaho.

Ray, Herman. 1976. Morphometric Data of Selected Idaho Water Bodies (Personal Communication). Boise, Idaho.

U.S. Environmental Protection Agency. 1975. National Eutrophication Survey Methods 1973-1976. Working Paper No. 175. National Environmental Research Center, Las Vegas, Nevada, and Pacific Northwest Environmental Research Laboratroy, Corvallis, Oregon.

Vollenweider, R. A. 1975. Input-Output Models With Special Reference to the Phosphorus Loading Concept in Limnology. Schweiz. Z. Hydrol. 37:53-84.

VI. APPENDICES

APPENDIX A

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX B

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR IDAHO 08/23/76

LAKE CODE 1611 PAYETTE LAKE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 373.0

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1611A1	373.0	2.46	2.69	2.72	8.78	40.21	41.34	8.69	4.70	2.78	2.94	2.21	2.46	10.19
1611A2	255.9	0.74	0.79	0.82	7.93	32.00	35.96	9.06	0.51	0.45	0.79	0.88	0.79	7.58
161181	12.8	0.057	0.057	0.085	0.283	1.133	1.189	0.311	0.057	0.057	0.057	0.085	0.085	0.289
161177	104.1	0.37	0.40	0.51	2.78	11.10	12.15	3.11	0.34	0.31	0.40	0.51	0.51	2.71

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 373.0
SUM OF SUB-DRAINAGE AREAS = 372.8
TOTAL FLOW IN = 126.66
TOTAL FLOW OUT = 121.99

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1611A1	10	74	3.738	20	2.492				
	11	74	1.274	15	1.218				
	12	74	1.331	14	1.274				
	1	75	1.586	18	1.671				
	2	75	1.926	15	2.180	16	2.124		
	3	75	1.756	14	1.501				
	4	75	1.756	19	1.642				
	5	75	14.300	18	21.379				
	6	75	59.749	7	75.323	21	46.723		
	7	75	28.090	5	80.703	19	3.823		
	8	75	7.221	17	10.449				
	9	75	8.353	13	8.948				
1611A2	10	74	0.283	20	0.538				
	11	74	0.538	15	0.396				
	12	74	0.991	14	0.991				
	1	75	1.104	18	1.104				
	2	75	1.416						
	3	75	1.133						
	4	75	1.218						
	5	75	10.449	18	18.661				
	6	75	43.608	7	52.952	21	44.457		
	7	75	20.870	5	40.493	19	9.883		
	8	75	3.341	17	1.218				
	9	75	1.472	13	1.416				

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TRIBUTARY FLOW INFORMATION FOR IDAHO

LAKE CODE 1611 PAYETTE LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
161181	10	74	0.028	20	0.023				
	11	74	0.028	15	0.031				
	12	74	0.028	14	0.031				
	1	75	0.283	18	0.680				
	2	75	0.170	15	0.142				
	3	75	0.113	14	0.085				
	4	75	0.227	19	0.198				
	5	75	0.623	18	0.934				
	6	75	1.444	7	1.982	21	1.218		
	7	75	0.708	5	1.529	19	0.311		
	8	75	0.113	17	0.085				
	9	75	0.057	13	0.057				

APPENDIX C

PHYSICAL AND CHEMICAL DATA

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

161101
44 55 35.0 116 06 37.0 3
LOWER PAYETTE
16085 IDAHO

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/04	10 05	0000	7.6	10.0	138		7.50	15	0.040	0.200K	0.020K	0.016K
	10 05	0005	7.4	9.6			7.60	15	0.040	0.200K	0.020K	0.013K
	10 05	0015	4.7	9.6			7.30	15	0.030	0.200	0.020K	0.012J
	10 05	0035	4.2	9.2			7.25	15	0.040	0.300	0.030	0.016K
	10 05	0075	3.7				7.01	13	0.040	0.200	0.040	0.013K
	10 05	0115	3.5	8.6			6.95	11	0.030	0.200K	0.040	0.011J
	10 05	0165	3.4	8.4			7.05	10K	0.020	0.200K	0.030	0.013
75/08/01	08 00	0000	14.4	9.8		16	7.30	15	0.020	0.500	0.020K	0.008
	08 00	0005	14.3	7.6		20	7.40	16	0.040	0.200K	0.020K	0.009
	08 00	0015	14.2	8.0		18	7.45	16	0.020	0.200K	0.020K	0.008
	08 00	0030	4.6	10.6		18	7.40	15	0.020	0.200K	0.020K	0.009
	08 00	0070	1.6	8.1		22	7.20	16	0.020	0.200K	0.040	0.002
	08 00	0120	0.9	6.2		20	7.10	17	0.020	0.200K	0.040	0.006
	08 00	0175	0.6	7.6		18	7.13	18	0.020K	0.200K	0.040	0.009
75/09/16	14 40	0000	17.9	7.9	264	20	7.10	10K	0.020K	0.200K	0.020K	0.004
	14 40	0005	17.8	8.6		21	7.40	10K	0.020K	0.200K	0.020K	0.002K
	14 40	0015	16.7	8.0		19	7.10	10	0.020K	0.200K	0.020K	0.002K
	14 40	0027	9.3	10.2		18	6.85	10	0.020K	0.200K	0.020K	0.013
	14 40	0055	6.4	8.2		16	6.65	10	0.020K	0.200K	0.020K	0.002K
	14 40	0090	5.4	8.2		18	6.55	11	0.020K	0.200K	0.030	0.002K
	14 40	0130	5.0	8.0		17	6.60	10	0.020K	0.200K	0.040	0.002K
	14 40	0175	4.7	7.8		16	6.50	10	0.020K	0.200K	0.050	0.002K

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K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE ESTIMATED

STORET RETRIEVAL DATE 74/08/25
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

161101
44 55 35.0 116 06 37.0 3
LOWER PAYETTE
16085 IDAHO

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/06/04	10 05	0000	0.014	3.0	
	10 05	0005	0.012		
	10 05	0015	0.013		
	10 05	0035	0.013		
	10 05	0075	0.011		
	10 05	0115	0.011		
	10 05	0165	0.012		
75/08/01	08 00	0000	0.116	6.2	
	08 00	0005	0.012		
	08 00	0015	0.009		
	08 00	0030	0.010		
	08 00	0070	0.007		
	08 00	0120	0.019		
	08 00	0175	0.010		
75/09/16	14 40	0000	0.031	4.6	
	14 40	0005	0.023		
	14 40	0015	0.020		
	14 40	0027	0.019		
	14 40	0055	0.018		
	14 40	0090	0.014		
	14 40	0130	0.015		
	14 40	0175	0.022		

STORET RETRIEVAL DATE 75/09/25
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

161102
44 58 20.0 116 04 00.0 3
LOWER PAYETTE
16085 IDAHO

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/04	10 45	0000	4.2	9.4	492		7.05	11	0.030	0.300	0.050	0.015K
	10 45	0005	3.8	9.4			7.05	17	0.040	0.200K	0.060	0.013K
	10 45	0015	3.5	9.4			7.05	12	0.030	0.200K	0.060	0.004
	10 45	0036	3.2	9.4			7.10	12	0.030	0.200K	0.060	0.013K
	10 45	0075	3.2	9.2			7.10	12	0.040	0.200K	0.070	0.004
	10 45	0115	3.1	9.8			7.15	13	0.030	0.200K	0.070	0.010K
	10 45	0165	3.1	10.0			7.00	13	0.030	0.200K	0.060	0.009J
75/08/01	07 00	0000	13.9	5.4		481	8.35	149	0.060	0.400	0.080	0.033J
	07 00	0005	14.1	7.6		17	8.40	15	0.020	0.200K	0.020K	0.012K
	07 00	0015	13.6	8.2		16	8.00	14	0.020K	0.200K	0.020K	0.010K
	07 00	0025	6.3	9.4		17	7.55	13	0.020	0.200K	0.020	0.008J
	07 00	0070	1.8	9.6		18	7.35	11	0.040	0.200K	0.050	0.007K
	07 00	0120	1.3	9.0		19	7.20	12	0.030	0.200K	0.060	0.006J
	07 00	0170	1.0	8.0		18	7.15	10	0.020	0.200K	0.060	0.007J
75/09/16	13 50	0000	16.5	8.2	264	16	8.10	10	0.020K	0.200K	0.020K	0.002K
	13 50	0005	16.4	8.2		18	7.80	11	0.020K	0.200K	0.020K	0.002K
	13 50	0015	15.3	8.6		18	7.50	11	0.020K	0.200K	0.020K	0.002
	13 50	0030	14.4	8.7		17	7.35	13	0.020K	0.300	0.020	0.002
	13 50	0075	6.4	9.2		14	7.10	10	0.020K	0.300	0.040	0.002
	13 50	0115	5.7	9.0		15	7.95	11	0.020K	0.300	0.050	0.002
	13 50	0140	5.5	9.0		15	7.50	11	0.020K	0.200K	0.060	0.002
	13 50	0175	5.2	9.1		14	7.10	12	0.020K	0.200K	0.060	0.002K

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K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE ESTIMATED

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

161102
44 58 20.0 116 04 00.0 3
LOWER PAYETTE
16085 IDAHO

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/06/04	10 45	0000	0.012	3.3	
	10 45	0005	0.009		
	10 45	0015	0.009		
	10 45	0036	0.009		
	10 45	0075	0.009		
	10 45	0115	0.009		
	10 45	0165	0.010		
75/08/01	07 00	0000	0.058	2.6	
	07 00	0005	0.010		
	07 00	0015	0.008		
	07 00	0025	0.008		
	07 00	0070	0.006		
	07 00	0120	0.006		
	07 00	0170	0.007		
75/09/16	13 50	0000	0.026	3.7	
	13 50	0005	0.025		
	13 50	0015	0.024		
	13 50	0030	0.023		
	13 50	0075	0.013		
	13 50	0115	0.016		
	13 50	0140	0.019		
	13 50	0175	0.022		

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

161103
44 56 45.0 116 03 55.0 3
LOWER PAYETTE
16085 IDAHO

11EPALES 2111202
0114 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/04	11	20 0000	9.5	11.0	284		7.50	14	0.040	0.200K	0.050	0.014K
	11	20 0005	7.4	9.6			7.40	14	0.040	0.200	0.040	0.011K
	11	20 0015	6.3	9.4			7.20	10K	0.030	0.300	0.030	0.011K
	11	20 0038	4.3	9.4			7.10	10	0.030	0.300	0.040	0.010K
	11	20 0075	3.4	9.4			7.00	11	0.030	0.200K	0.040	0.011J
	11	20 0110	3.2	8.8			6.80	12	0.040	0.200	0.050	0.012J
75/08/01	07	30 0000	15.3	9.8	156	17	7.20	10	0.020	0.200	0.020K	0.007J
	07	30 0005	15.1	7.6		14	7.30	12	0.020	0.200K	0.020K	0.007K
	07	30 0020	15.0	7.8		15	7.25	12	0.020	0.200	0.020K	0.006J
	07	30 0030	4.7	7.4		16	7.00	13	0.020	0.200	0.020	0.008J
	07	30 0065	2.1	10.6		16	6.90	14	0.040	0.400	0.050	0.018
	07	30 0106	1.5	8.2		18	6.70	12	0.030	0.400	0.050	0.009
75/09/16	14	20 0000	17.7	8.0	284	18	8.00	13	0.020K	0.200K	0.020K	0.002K
	14	20 0005	17.6	8.1		18	7.65	10K	0.020K	0.200K	0.020K	0.002K
	14	20 0015	16.9	8.5		19	7.50	10K	0.020K	0.200K	0.020K	0.002K
	14	20 0027	15.0	8.8		19	7.35	10K	0.020K	0.200K	0.020K	0.002K
	14	20 0060	6.3	9.0		19	7.00	10K	0.020K	0.200K	0.040	0.002K
	14	20 0098	6.0	8.1		23	6.80	10K	0.020	0.400	0.040	0.002K

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT PENNING PERCENT
75/06/04	11	20 0000	0.009	1.4	
	11	20 0005	0.008		
	11	20 0015	0.009		
	11	20 0038	0.008		
	11	20 0075	0.013		
	11	20 0110	0.039		
75/08/01	07	30 0000	0.008	13.8	
	07	30 0005	0.005		
	07	30 0020	0.006		
	07	30 0030	0.008		
	07	30 0065	0.043		
	07	30 0106	0.070		
75/09/16	14	20 0000	0.017	2.8	
	14	20 0005	0.020		
	14	20 0015	0.017		
	14	20 0027	0.024		
	14	20 0060	0.017		
	14	20 0098	0.301		

K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE ESTIMATED

8C

APPENDIX D

TRIBUTARY AND WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA- LAS VEGAS

1611A1
44 54 30.0 116 07 10.0 4
N FORK PAYETTE RIVER
16 VALLEY CO HWY MP
0/PAYETTE LAKE
HWY 55 BRDG IN MCCALL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/10/20	15	05	0.008	0.100K	0.015	0.005K	0.005K
74/11/15	11	30	0.040	0.100K	0.015	0.005K	0.010K
74/12/14	12	00	0.008	0.300	0.010	0.005K	0.020
75/01/18	10	30	0.012	1.100	0.005	0.005K	0.010K
75/02/15	18	00	0.015	0.300	0.024	0.008K	0.010K
75/03/14	08	30	0.005	0.050	0.015	0.005K	0.010K
75/04/19	15	30	0.020	0.800	0.025	0.005K	0.010K
75/05/18	10	00	0.020	0.500	0.020	0.005K	0.010K
75/06/07	14	10	0.005	0.050K	0.025	0.005K	0.020
75/06/21	08	00	0.005	0.200	0.020	0.005K	0.010K
75/07/05	07	50	0.005	0.350	0.015	0.010	0.010
75/07/19	07	20	0.005	0.100	0.015	0.005K	0.010K
75/08/17	16	00	0.005	0.800	0.015	0.010	0.040
75/09/13	16	00	0.002	0.200	0.002	0.005K	0.015

K VALUE KNOWN TO BE LESS
THAN INDICATED

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA- LAS VEGAS

161142
45 00 30.0 116 03 30.0 4
N FORK PAYETTE RIVER
16 VALLEY CO HWY MP
T/PAYETTE LAKE 130792
SEC RD BRDG 8 MI N OF MCCALL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/10/20	14 00		0.048	0.100K	0.020	0.005K	0.006
74/11/15	13 00		0.040	0.200	0.010	0.005K	0.010K
74/12/14	10 30		0.048	0.500	0.010	0.005K	0.010
75/01/18	09 00		0.080	0.600	0.040	0.005K	0.040
75/05/18	10 25		0.175	0.250	0.025	0.005K	0.010K
75/06/07	15 45		0.065	0.300	0.045	0.005	0.020
75/06/21	09 30		0.022	0.500	0.032	0.005K	0.010K
75/07/05	09 32		0.005	0.750	0.020	0.005	0.010K
75/07/19	09 00		0.005	0.550	0.022	0.005K	0.010K
75/08/17	11 00		0.015	0.075	0.010	0.005	0.010K
75/09/13	16 35		0.010	0.200	0.010	0.005K	0.005

K VALUE KNOWN TO BE LESS
THAN INDICATED

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA- LAS VEGAS

161181
44 59 00.0 116 03 30.0 4
HORSE CREEK
16 VALLEY CO HWY MP
T/PAYETTE LAKE
SEC RD 3906 BRDG 6 MI N OF MCCALL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/10/20	14	30	0.048	0.200	0.010	0.005K	0.005K
74/11/15	12	30	0.120	0.100K	0.015	0.005K	0.010K
74/12/14	10	00	0.224	0.500	0.015	0.005K	0.010
75/01/18	10	00	0.256	0.200	0.012	0.005K	0.010K
75/02/15	20	00	0.248	0.200	0.016	0.008K	0.020
75/03/14	07	30	0.250	0.500	0.015	0.005K	0.010K
75/04/19	16	00	0.450	0.400	0.015	0.005K	0.010K
75/05/18	10	45	0.660	0.425	0.035	0.005	0.010K
75/06/07	15	15	0.270	0.350	0.025	0.005	0.030
75/06/21	12	50	0.110	0.300	0.015	0.005K	0.010K
75/07/05	08	40	0.020	0.350	0.015	0.005	0.010K
75/07/19	08	10	0.025	0.200	0.015	0.005K	0.010K
75/08/17	13	00	0.030	1.350	0.025	0.005	0.020
75/09/13	16	25	0.060	0.250	0.010	0.002	0.010

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA- LAS VEGAS

1611C1
45 00 00.0 116 03 30.0 4
ELIP CREEK
16 VALLEY CO HWY MP
T/PAYETTE LAKE 130792
SEC RD BRDG 7 MI N OF MCCALL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
75/06/07	16	00	0.055	0.525	0.025	0.005K	0.010K
75/06/21	10	10	0.005	0.400	0.015	0.005K	0.010
75/07/05	10	00	0.005	0.300	0.015	0.005K	0.010K
75/07/19	10	00	0.010	0.150	0.015	0.005K	0.010K
75/08/17	09	00	0.030	0.150	0.015	0.005K	0.010K
75/09/13	17	45	0.015	0.050	0.002	0.005K	0.020

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/25
NATL EUTROPHICATION SURVEY
EPA- LAS VEGAS

1611D1
44 57 20.0 116 03 30.0 4
FALL CREEK
16 VALLEY CO HWY MP
T/PAYETTE LAKE
SEC RD BRDG 4 MI NE OF MCCALL
11EPALES 211120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/10/20	13	15	0.040	0.100K	0.015	0.015	0.015
74/11/15	13	30	0.040	0.200	0.015	0.015	0.015
74/12/14	12	45	0.096	0.100	0.015	0.005K	0.010
75/01/18	11	45	0.128	0.600	0.010	0.005K	0.010K
75/02/15	11	00	0.120	0.200	0.008	0.008K	0.020
75/03/14	09	30	0.110	1.050	0.020	0.005K	0.010K
75/04/19	12	00	0.115	1.250	0.035	0.005K	0.010K
75/05/18	09	45	0.170	0.650	0.015	0.010	0.010
75/06/07	16	30	0.055	0.500	0.025	0.005K	0.020
75/06/21	11	00	0.015	0.250	0.010	0.011	0.019
75/07/05	11	00	0.005	0.250	0.010	0.005K	0.010
75/07/19	10	00	0.010	0.250	0.010	0.010	0.010
75/08/17	08	00	0.020	0.250	0.015	0.015	0.040
75/09/13	17	10	0.015	0.100	0.010	0.010	0.015

K VALUE KNOWN TO BE LESS THAN INDICATED

APPENDIX E

PARAMETRIC RANKINGS OF LAKES SAMPLED BY NES IN 1975

STATE OF IDAHO

Mean or median values for six of the key parameters evaluated in establishing the trophic conditions of Idaho lakes sampled are presented to allow direct comparison of the ranking, by parameter, of each lake relative to the others. Median total phosphorus, median inorganic nitrogen and median dissolved orthophosphorus levels are expressed in mg/l. Chlorophyll a values are expressed in µg/l. To maintain consistent rank order with the preceding parameters, the mean Secchi disc depth, in inches, is subtracted from 500. Similarly, minimum dissolved oxygen values are subtracted from 15 to create table entries.

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
1601	AMERICAN FALLS RESERVOIR	0 (0)	17 (1)	8 (1)	8 (1)	21 (2)	0 (0)
1602	CASCADE LAKE	33 (4)	54 (6)	17 (2)	42 (5)	4 (0)	50 (5)
1603	LAKE COEUR D'ALENE	67 (8)	96 (11)	50 (6)	25 (3)	67 (8)	83 (10)
1604	DWORSHAK RESERVOIR	96 (11)	17 (1)	25 (3)	83 (10)	100 (12)	50 (5)
1605	HAUSER	42 (5)	33 (4)	75 (9)	17 (2)	4 (0)	25 (3)
1606	HAYDEN LAKE	96 (11)	96 (11)	92 (11)	75 (9)	75 (9)	100 (12)
1607	ISLAND PARK RESERVOIR	25 (3)	71 (8)	42 (5)	33 (4)	54 (6)	33 (4)
1608	LAKE LOWELL	8 (1)	42 (5)	0 (0)	0 (0)	33 (4)	17 (2)
1609	MAGIC RESERVOIR	17 (2)	0 (0)	33 (4)	50 (6)	21 (2)	6 (1)
1610	PALISADES RESERVOIR	50 (6)	17 (1)	83 (10)	100 (12)	54 (6)	75 (9)
1611	LOWER PAYETTE	83 (10)	54 (6)	100 (12)	67 (8)	83 (10)	67 (8)
1612	LOWER TWIN LAKES	75 (9)	71 (8)	58 (7)	92 (11)	42 (5)	50 (5)
1613	UPPER TWIN LAKES	58 (7)	83 (10)	67 (8)	58 (7)	92 (11)	92 (11)

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
1601	AMERICAN FALLS RESERVOIR	0.105	0.080	463.800	15.379	14.700	0.035
1602	CASCADE LAKE	0.032	0.060	415.067	8.081	14.800	0.009
1603	LAKE COEUR D'ALENE	0.017	0.040	380.348	10.391	12.200	0.005
1604	DWORSHAK RESERVOIR	0.010	0.080	401.866	2.420	7.400	0.009
1605	HAUSER	0.028	0.075	366.286	11.112	14.800	0.013
1606	HAYDEN LAKE	0.010	0.040	243.500	2.787	11.800	0.003
1607	ISLAND PARK RESERVOIR	0.034	0.050	391.778	9.322	12.800	0.012
1608	LAKE LOWELL	0.070	0.070	477.111	25.389	14.600	0.015
1609	MAGIC RESERVOIR	0.062	0.130	400.750	7.322	14.700	0.020
1610	PALISADES RESERVOIR	0.024	0.080	345.428	2.067	12.800	0.007
1611	LOWER PAYETTE	0.013	0.060	234.000	4.600	9.600	0.007
1612	LOWER TWIN LAKES	0.016	0.050	370.000	2.318	13.600	0.009
1613	UPPER TWIN LAKES	0.017	0.045	369.143	4.986	8.200	0.004